

Appl. No. 10/559,370
Atty. Doc. No. 2003P05858WOU5

REMARKS

Claims 22, 25 and 27 are withdrawn from consideration. Claims 19-21, 23-24, 26 and 28 are rejected under 35 USC 112, first paragraph. Claims 19-21, 26 and 28 are rejected on the ground of nonstatutory obviousness type double patenting. Claims 19-21 and 26 are rejected under 35 USC 102(b) as being anticipated by Fredriksson. Claims 23, 24 and 28 are rejected under 35 USC 103(a) as being unpatentable over Fredriksson in view of Spies.

Claim 19 is amended and new claim 29 is added herein. Support for these amendments can be found in the previously pending claims and FIG. 10 of the application.

Election/Restriction:

Withdrawn claims 22, 25 and 27 are cancelled herein without acquiescence to the restriction requirement.

Rejection under 35 USC 112, first paragraph

The Examiner rejected claims 19, 20, 21, 23-24, 26 and 28 under 35 USC 112, first paragraph, as failing to comply with the enablement requirement, and contended that "it is not described how there would be only a radial force with no axial component (claim 1, line 9-10) because since there are axial components to the fluid passageway there inherently would be at least some axial components to the force applied as well." (Office Action, p. 3). The Applicant does not agree with the Examiner's position, since the fluid passageway, including the radial hole 87 and groove 88, are longitudinally symmetrical, and therefore, there would be no net axial force component. However, in order to expedite allowance of the application, the objected to language has been cancelled from the claims, thereby rendering the rejections moot.

Nonstatutory Double Patent Rejection

Applicant respectfully requests that the Examiner hold this rejection in abeyance, pending the indication of allowable subject matter in the present application.

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Rejection under 35 USC 102

The Examiner rejected claim 19 as being anticipated by Fredriksson. Independent claim 19 recites a shank member including a length along a longitudinal axis and an outside surface parallel to the longitudinal axis along a mating portion. Additionally, independent claim 19 recites an annular member including an opening defined by an inside surface parallel to the longitudinal axis and sized to receive the shank member mating portion with an interference fit for resisting relative motion under the influence of a tensioning force being transferred there between. Fredriksson teaches away from this claimed geometry, and accordingly, Fredriksson does not support the rejection of claim 19.

First, it is noted that the screwed joint of Fredriksson is a different geometry and is designed to carry a different type of load than the present invention. The screwed joint of Fredriksson is used to join two portions of a rotating shaft, such as in a propeller shaft of a ship, where the primary loading across the screw joint is a shear force, and where the axial forces are carried by the shaft itself, not by the screw joint. (see Fredriksson column 1, lines 12-19) This can be appreciated by viewing FIG. 3 of Fredriksson where the axis of the propeller shaft is from right to left in the figure, and the torque load that is being transmitted tends to cause shear forces perpendicular to the longitudinal axis of the intermediate portion 4 of the screw 1 (into and out of the plane of the paper of the figure). In contrast, the present invention is intended for applications where two flange sections are pulling apart from each other in the direction of the longitudinal axis of the shank. As described at column 1, lines 20-25 of Fredriksson, the screw and/or the hole in the shaft coupling are conical, and the joint functions by forcing the screw to wedge into and to fit grippingly into the hole. The relatively low level of preloading on the screws and the bolts applied to either end of such screws function simply to keep the screw from coming out of position during the operation of the shaft.

Second, the oil being injected into the smaller hole 10 of Fredriksson functions as lubricating oil to allow the screw to be wedged into the conical opening 15 in the shaft coupling. It does not function "to expand the opening for relaxing the interference fit" as does the fluid of the present invention. Rather, the screw 1 is pulled into position by the forcing device 21. This may be appreciated by viewing FIG. 3 of Fredriksson where it can be seen that the shaft coupling halves 2 and 3 are not symmetrical about the screw 1 (more material exists between the screw

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and the center of the shaft than between the screw and the outer circumference of the shaft), such that any pressure applied into hole 10 of Fredriksson would not expand the opening 15 in the coupling halves symmetrically, but rather would cause the opening to take an oval shape, which would actually bind the screw into the opening 15.

In rejecting independent claim 19, the Examiner contends that the intermediate portion 4 of Fredriksson is the recited shank member including a length along a longitudinal axis and an outside surface parallel to the longitudinal axis along a mating portion. However, Fredriksson expressly teaches that the intermediate portion is "slightly conical" and "is intended to fit into co-broached conical holes in the coupling halves 2 and 3" (col. 1 line 68 – col. 2 line 1). Since the intermediate portion 4 is conical, including along a portion of the intermediate portion 4 which is fit within the conical holes of the halves 2 and 3, the outer surface of the intermediate portion 4 along the mating portion with the halves 2 and 3 is not parallel to a longitudinal axis of the intermediate portion 4. Instead, the outer surface of the intermediate portion 4 will form an angle with the longitudinal axis of the intermediate portion 4, by virtue of the intermediate portion 4 being conical. Indeed, Fredriksson fails to disclose a shank member including a length along a longitudinal axis and an outside surface parallel to the longitudinal axis along a mating portion. Accordingly, independent claim 19 is patentable.

In rejecting independent claim 19, the Examiner also contends that the coupling half 2 of Fredriksson discloses an annular member including an opening defined by an inside surface parallel to the longitudinal axis of the intermediate portion. However, as discussed above, the coupling half 2 features a conical opening 15, to fit the mating portion of the intermediate portion 4. Since the outer surface of the intermediate portion 4 is not parallel to the longitudinal axis of the intermediate portion 4, and the outer surface of the intermediate portion 4 is fit to the inside surface of the conical opening in the coupling half 2, the inside surface of the opening in the coupling half 2 is not parallel to the longitudinal axis of the intermediate portion 4. Indeed, Fredriksson fails to disclose an annular member including an opening defined by an inside surface parallel to the longitudinal axis of the intermediate portion.

Accordingly, amended independent claim 19 is patentable, and its dependent claims 20, 21 and 26, which are also rejected as being anticipated by Fredriksson, recite yet further distinguishing features and require no further discussion herein.

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Rejection under 35 USC 103

The Examiner rejected claims 23, 24 and 28 under 35 USC 103(a), as being unpatentable over Fredriksson in view of Spies. As argued above, independent claim 19 is patentable. Dependent claims 23, 24 and 28, which recite yet further distinguishing features, are also patentable, and require no further discussion herein.

Conclusion

Entry of this paper and the allowance of claims 19-21, 23, 24, 26 and 28 are respectfully requested.

Respectfully submitted,

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